

**U.S. DEPARTMENT OF ENERGY**  
**NEVADA OPERATIONS OFFICE**

**MANUAL**

**NV M 435.1-1**

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**RADIOACTIVE WASTE MANAGEMENT  
MANUAL**

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**INITIATED BY:**  
**Assistant Manager for Environmental  
Management**

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1. OBJECTIVE. This Manual establishes an integrated Site-Wide Radioactive Waste Management Program (SWRWMP) and basis for the management of radioactive waste (RW) under the responsibility of the Department of Energy (DOE) Nevada Operations Office (DOE/NV). For the purposes of this Manual, RW includes low-level waste (LLW), transuranic waste (TRU), and mixed waste (MW). The requirements in this Manual are implemented to ensure conformance to DOE O 435.1, RADIOACTIVE WASTE MANAGEMENT, and DOE M 435.1-1, RADIOACTIVE WASTE MANAGEMENT MANUAL, both dated 7-9-99.
2. CANCELLATION. NV Order 5820.2A, RADIOACTIVE WASTE MANAGEMENT, dated 4-21-95.
3. APPLICABILITY.
  - a. DOE/NV Organizations. All DOE/NV organizations with responsibility for projects, programs, and/or facilities that generate, store, treat, and/or dispose of RW.
  - b. Contractors/National Laboratories/Users. The requirements applicable to contractors, national laboratories, other federal agencies, and users that generate, treat, store, and/or dispose RW under the responsibility of DOE/NV are set forth in the Contractor Requirements Document, Attachment 1.
4. REQUIREMENTS. The requirements in this Manual are effective upon issuance. Requirements encompassed in this Manual are applicable to LLW, TRU, and MW and establish the DOE/NV SWRWMP which includes the following elements:
  - a. Ensuring a DOE/NV Radioactive Waste Management Basis (RWMB) is developed and maintained;
  - b. Ensures that a Radioactive Waste Information Document (RWID) is developed for each applicable DOE/NV facility, operation, and activity;
  - c. Providing a review and approval process for the DOE/NV RWMB and the site specific RWIDs;
  - d. Ensuring all elements defined by this Manual have been incorporated into each applicable activity before operations begin; and

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- e. Delineation of responsibilities and requirements for conformance with principles and practices of DOE O 435.1.

## 5. RESPONSIBILITIES.

- a. DOE Headquarters (DOE/HQ) Environmental Management. Approves Performance Assessments (PA), Composite Analyses (CA), disposal authorization statements, and determines the modification, extension, or waiver of Departmental requirements, as appropriate.
- b. DOE/NV Manager.
  - (1) Ensures safe and efficient management of all RW under the responsibility of DOE/NV according to this Manual;
  - (2) Ensures development and maintenance of an integrated SWRWMP and the DOE/NV RWMB;
  - (3) Ensures oversight of RW generation, treatment, storage, and disposal activities and facilities is conducted;
  - (4) Ensures coordination with DOE/HQ regarding the recommendation and approval of DOE/NV PAs and CAs, disposal authorization statements, and determination of the modification, extension, or waiver of Departmental requirements, as appropriate; and
  - (5) Ensures waste minimization and pollution prevention programs are developed and maintained.
- c. Office of Assistant Manager for Environmental Management (AMEM).
  - (1) Establishes, implements, and maintains an integrated SWRWMP and maintains oversight of the program and associated activities and facilities;
  - (2) Approves RWIDs for applicable RW activities;
  - (3) Submits PAs and CAs to DOE/HQ for approval;

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- (4) Approves facility closure and monitoring plans and PA and/or CA maintenance plans;
- (5) Approves requests for exemption from specific processes or elements within the RWID;
- (6) Approves requests for generation of Waste With No Identified Path to Disposal (WNIPD). Communicates the decision regarding the request to DOE/HQ; and
- (7) Approves the use of non-DOE facilities, communicates the decision to DOE/HQ, and host states and state compacts.
- (8) May delegate roles and responsibilities to other appropriate DOE/NV personnel.

d. Other Assistant Managers.

- (1) Ensure that RW under their purview meets the requirements set forth in this Manual, specifically the development and implementation of an RWID for all activities related to the generation, treatment, storage, and disposal of RW;
- (2) Provide the necessary funding to support this activity; and
- (3) Operate within the parameters of the RWID.

e. Director, Waste Management Division (WMD).

- (1) Serves as the point of contact for the SWRWMP;
- (2) Oversees management and operations of Nevada Test Site (NTS) RW disposal facilities;
- (3) Recommends approval of RWIDs;
- (4) Confers with customers who have WNIPD and offer recommendations regarding generation of the RW stream;

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- (5) Coordinates reviews of PAs and CAs;
  - (6) Serves as Chairperson of the Radioactive Waste Management Basis Assistance and Review Team (RWMBART). In this capacity, the Chairperson shall serve as the initial approval authority for all RWMBART recommendations including RWIDs. The Chairperson shall also direct and coordinate RWMBART activities and reviews, and delegate responsibilities as appropriate; and
  - (7) Oversees corrective actions required to mitigate or prevent recurrence of violations and/or operations not conducted in accordance with the requirements set forth in this Manual.
- f. DOE/NV National Environmental Policy Act (NEPA) Compliance Officer. Works directly with the Division Director, WMD, to ensure existing and proposed RW facilities, operations, and activities meet the requirements of NEPA and associated DOE Orders.
- g. Radioactive Waste Management Basis Assistance and Review Team. A panel composed of representatives from applicable DOE/NV and user programs that generate, store, treat, or dispose RW. Panel membership shall be appointed by AMEM or designee who will select candidates based upon subject matter expertise, as well as federal and contractor recommendations. The RWMBART is designed to ensure technical elements of the RWID are adequately addressed and consistently applied. The panel, chaired by the Division Director, WMD (or designee), shall:
- (1) Provide guidance for the development of the RWID;
  - (2) Review all RWID packages and requests for exemption to ensure technical elements are satisfied; and
  - (3) Recommend concurrence to the WMD for inclusion of RWIDs as part of the DOE/NV RWMB.
- h. Other Division Directors. Manage RW under their purview in accordance with requirements set forth in this Manual.

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6. IMPLEMENTATION. Existing RW facilities, operations, and activities shall be in compliance with this Directive no later than March 5, 2001.
7. REVISIONS. Administrative requirements of this Manual will be revised as needed to support safe and efficient RW management at DOE/NV facilities.
8. REFERENCES.
  - a. DOE O 435.1, RADIOACTIVE WASTE MANAGEMENT, dated 7-9-99.
  - b. DOE M 435.1-1, RADIOACTIVE WASTE MANAGEMENT MANUAL, dated 7-9-99.
9. DEFINITIONS.
  - a. Authorization Basis. Those aspects of the facility design basis and operational requirements relied upon by DOE/NV to authorize operation. They are considered to be important to the safety of the facility operations. The authorization basis is described in documents such as the facility Safety Analysis Report and other safety analyses; hazard classification documents, technical safety requirements, DOE-issued safety evaluation reports, DOE/NV Real Estate/Operations Permit (REOP), and facility-specific commitments made in order to comply with DOE Orders or Policies.
  - b. Composite Analysis. An analysis that accounts for all sources of radioactive material that may contribute to the long-term dose projected to a hypothetical member of the public from an active or planned LLW disposal facility. The analysis is a planning tool intended to provide a reasonable expectation that current LLW disposal activities will not result in the need for future corrective or remedial actions to ensure protection of the public and the environment.
  - c. Performance Assessments. An analysis of a RW disposal facility conducted to demonstrate there is a reasonable expectation that performance objectives established for the long-term protection of the public and the environment will not be exceeded following closure of the facility.

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- d. Disposal Authorization Statement. Following DOE/HQ's review and approval of documentation for an RW disposal facility, a disposal authorization is to be issued that sets forth any necessary conditions for design, construction, and operation of the facility in order to maintain reasonable assurance that the disposal performance objectives will be met.
- e. Graded Approach. A process by which the level of analysis, documentation, and actions necessary to comply with a requirement are commensurate with (1) the relative importance to safety, safeguards, and security; (2) the magnitude of any hazard involved; (3) the life-cycle stage of a facility; (4) the programmatic mission of the facility; (5) the particular characteristics of a facility; and (6) any other relevant factors.
- f. Hazard. A source of danger (i.e., material, energy source, or operation) with the potential to cause illness, injury, or death to personnel or to the environment (without regard for the likelihood or credibility of accident scenarios or consequence mitigation).
- g. Life-Cycle. The life of a waste from generator planning through generation, storage, treatment, and disposal.
- h. Radioactive Waste. Any garbage, refuse, sludge, and other discarded material, including solid, liquid, semisolid, or contained gaseous material that must be managed for its radioactive content. RW under DOE/NV purview includes LLW, TRU, and MW.
- i. RW Generator. Organizations within DOE/NV or managed by DOE/NV whose act or process produces RW or, for purposes of this Manual, transfer of RW to a treatment, storage, or disposal facility.
- j. Radioactive Waste Information Document. The RW controls applied to DOE/NV facilities, operations, and activities to provide near- and long-term protection of the public, workers, and the environment. The RWID consists of controls and analyses such as facility waste certification programs, facility waste acceptance requirements, LLW disposal facility closure plans, PAs, CAs, and other facility-specific processes, procedures, and analyses made to comply with DOE O 435.1 and this Manual.

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- k. DOE/NV Radioactive Waste Management Basis. Accumulation of approved RWIDs that establishes the standards for which RW is managed and to demonstrate that the elements of DOE O 435.1 have been evaluated and applied as necessary to properly manage RW.
- l. Real Estate/Operations Permit. A DOE/NV mechanism for authorization of work and control of real estate (per NV M 412.X1B) under DOE/NV's purview. The REOP assigns safety coordination responsibility of a specific real estate or operation to a primary organization. The REOP is designed to: (1) ensure that the activities of one organization do not present unknown hazards to another organization's employees; (2) ensure that requirements and implementing documents of all involved organizations are sufficiently integrated to avoid adverse consequences; and (3) ensure that each organization is prepared to take appropriate emergency response action to protect the health and safety of the employees and protect the environment.
- m. Site-Wide Radioactive Waste Management Program. Consists of this Manual, a culmination of approved RWIDs, the DOE/NV RWMB, the RWMBART, applicable Authorization Basis Documentation, and organizational plans and procedures developed to comply with this Manual. This program, maintained at the level, serves as documenting the development, implementation, and maintenance of the DOE/NV Waste Management Program.
- n. Staging. Temporary storage of waste for the purpose of accumulation to facilitate efficient and cost effective transportation, treatment, and/or disposal. Staging is allowed for 90-days or less, unless an approved exemption is contained in the RWID.
- o. Storage. The holding of RW for a temporary period at the end of which the waste is transferred for treatment, disposal, or storage elsewhere. Storage is limited to 1 year, unless an approved exemption is contained in the RWID.
- p. Storage for Decay. Storage of RW for a period of time sufficient for radionuclide(s) of concern to be reduced in concentration, by radioactive decay, to a level of lower concern.
- q. Waste Acceptance Criteria. The facility specific technical and administrative requirements that a waste must meet in order for it to be accepted at a storage, treatment, or disposal facility.



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- r. Waste Accumulation. A generator may accumulate 55 gallons or less of RW at or near the point of generation. Upon exceeding 55 gallons, the waste is considered to be staged.
- s. Waste Characterization. The identification of waste composition and properties by review of acceptable knowledge (which includes process knowledge), nondestructive examination, nondestructive assay, or sampling and analysis. Waste characterization information is necessary to ensure compliance with applicable storage, treatment, handling, transportation, and disposal requirements.
- t. Waste Certification. A process by which a waste generator affirms that a given waste or waste stream meets the waste acceptance criteria of the facility to which the generator intends to transfer waste for treatment, storage, or disposal.
- u. Waste Stream. A waste or group of wastes, with similar physical, chemical, or radiological properties, originating from a similar processes.
- v. Radioactive WNIPD. RW for which there is no identified and/or acceptable transportation method, treatment method, or disposal facility.

## 10. ATTACHMENTS.

- a. Contractors Requirements Document.

## 11. CONTACT. Questions concerning this Manual should be directed to AMEM at (702) 295-7063.



Kathleen A. Carlson  
Manager

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## CHAPTER I

### GENERAL REQUIREMENTS

1. APPLICABILITY. DOE/NV RW management activities are include the following:
  - a. LLW generation, treatment, storage, and disposal.
  - b. TRU generation, treatment, storage, and maintenance of past disposal locations.
  - c. MW generation, treatment, storage, and disposal.
  - d. Affected generators include, but are not limited to:
    - (1) Environmental Management;
    - (2) National Nuclear Security Agency;
    - (3) National laboratories; and
    - (4) NTS contractors and users.
2. REQUIREMENTS.
  - a. DOE O 435.1 and DOE M 435.1-1. Principles and practices outlined in DOE O 435.1 and DOE M 435.1-1 are the basis for the development, requirements herein, and implementation of this Manual.
  - b. Site-Wide Radioactive Waste Management Program. This Manual documents the SWRWMP, which implements a systematic approach for planning, executing, and evaluating the site-wide management of RW under the purview of DOE/NV, including the review of relevant generators and facilities. This program, in aggregate, includes the DOE/NV RWMB developed by organizations that generate, treat, store, and/or dispose of RW; and includes RWIDs, Authorization Basis Documentation, Activity Agreements and REOPs associated with RW facilities, operations, and activities. Specific components of RWIDs are addressed in Chapters II-V.

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- c. Support Requirements. All appropriate environment, safety, and health; conduct of work; emergency management, and environmental and occurrence reporting; environmental monitoring; hazard analysis; asset management and site evaluation and facility design; waste characterization; packaging, and transportation; quality assurance; radiation protection; records management; safeguards, and security; and worker protection analyses and documentation associated with RW activities shall be completed in accordance with programmatic contractual requirements, including DOE/NV Work Smart Standards; and DOE/NV management system requirements.
- d. Analysis of Environmental Impacts. Existing and proposed RW facilities, operations, and activities shall meet the requirements of 10 Code of Federal Regulations (C.F.R.) Part 1021, *National Environmental Policy Act Implementing Procedures*; and DOE O 451.1A, NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE PROGRAM, as determined by the DOE/NV NEPA Compliance Officer.
- e. Waste Acceptance Criteria.

RW generated under DOE/NV purview or accepted as part of DOE/NV's role as a regional disposal center shall meet RW acceptance criteria developed by AMEM. Review and approval to ship or receive RW at the NTS for disposal is delegated to AMEM.

Any DOE/NV facilities which receive RW for treatment, storage, and disposal must develop and implement RW acceptance criteria which establish the facility's requirements for the receipt, evaluation, and acceptance of the waste.
- f. Training and Qualification. A program ensuring the training and qualification of designated waste management personnel, commensurate with job duties and responsibilities, will be in place. Only those personnel who have been trained and qualified shall design or operate structures, systems, and components that are safety based or present significant physical or environmental hazards.
- g. Oversight. Federal oversight of contractor RW activities shall be conducted in accordance with NV O 220.X, DOE/NV OVERSIGHT MANAGEMENT SYSTEM. Documenting and tracking applicable corrective actions shall be in conformance with requirements in the Order.

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- h. Process Improvements. NV O 230.X, DOE/NV LESSONS LEARNED PROGRAM, shall be used to document lessons learned and continuous process improvements.
- i. Integrated Safety Management. In all cases, RW work shall be conducted safely and in accordance with Integrated Safety Management principles and practices, as implemented through the contractors approved Integrated Safety Management System Description.
- j. Waste With No Identified Path to Disposal.
  - (1) The determination of whether a waste stream has an identified path to disposal should be based on the availability of existing or planned facilities and operations and on the technical acceptability of the waste at the facility.
  - (2) A planned facility is considered to be available if it has been authorized (e.g., a line item in a Congressional appropriation or equivalent approval for design or construction). In addition, treatment and/or disposal of waste using future technology or an existing facility that is part of a program or strategic plan not yet authorized, may be considered for planning purposes only. A facility is not considered available if it is not authorized to accept or manage a particular waste type or form.
  - (3) Prior to generation, generators of WNIPD must provide the following documentation to AMEM:
    - (a) Suspected waste type and form;
    - (b) Identification of issues preventing disposal of the waste;
    - (c) Justification for generation; and
    - (d) Life-cycle planning data.
  - (4) WNIPD shall not be generated without prior approval by AMEM. AMEM shall notify DOE/HQ of the decision to approve generation of WNIPD. Approvals shall include the following considerations:

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- (a) Conditions for approval/reasons for denial;
  - (b) Expiration date of the approval; and
  - (c) Conditions that would require a new approval/additional requirements needed for approval.
- (5) Existing WNIPD inventories shall be managed using life-cycle planning.
- k. Use of Non-DOE/NV Facilities. For RW under the purview of DOE/NV, if capabilities to treat, store, or dispose waste on the NTS are not practical or cost effective, exemptions may be approved to allow use of non-DOE facilities. Non-DOE facilities may be used providing the facilities comply with applicable federal, state, and local requirements, and the necessary permits are in place. These exemptions shall be documented in the RWID to be cost effective and in the best interest of DOE/NV.
- l. Exemptions.

DOE O 435.1 requirements may be waived or modified through the application of a DOE-approved requirements tailoring process, such as the "Necessary and Sufficient Closure Process" in DOE P 450.3, DOE M 450.3-1, and DOE P 450.4, SAFETY MANAGEMENT SYSTEM POLICY, or by an exemption processed in accordance with the requirements of that Directive or DOE M 251.1-1A, DIRECTIVES SYSTEM MANUAL. Requirements outlined in this Manual that conflict with a federal regulation or a state-enforced agreement, and/or compliance or consent order, shall be waived by the DOE/NV Manager.

For DOE/NV site-specific requirements, if it is believed an exemption from requirements is warranted, a request may be included in the RWID and submitted to the Division Director, WMD, who will evaluate the proposed exemption and present it to AMEM for approval.



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## CHAPTER II

### GENERATOR REQUIREMENTS

#### 1. APPLICABILITY.

- a. Radioactive Waste Information Document. Applicable RW generators shall prepare an RWID for review and approval by the AMEM prior to generating an RW no later than March 5, 2001. Generators operating under an approved Authorization Basis may reference those RWID components that have been addressed by the Authorization Basis. Only those RWID components not included in the approved Authorization Basis are subject to review and approval by the AMEM.
- b. New Generators. New generators of RW shall prepare an RWID prior to generating an RW.

#### 2. RWID COMPONENTS.

- a. Life-Cycle Planning.
  - (1) All applicable RW generators shall develop life-cycle planning and waste projection data for existing waste streams and prior to generation of future waste streams. Existing facility plans and other planning documents may be used to fulfill life-cycle planning requirements.

Life-cycle planning shall include:

- (a) Facility/activity/operation that generates the RW stream;
- (b) Radiological, chemical, and physical characteristics of the waste, to the extent possible;
- (c) Steps necessary to manage the waste leading to disposal;
- (d) Method to accomplish necessary steps;

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- (e) Identification of funding needs leading to disposal; and
  - (f) Identification of WNIPD.
- (2) Waste projections shall be entered into the Integrated Planning, Accountability, and Budgeting System-Information System. All waste projections must be coordinated with the applicable facility and submitted to AMEM by March 1 of each year. Updates to waste projections must be submitted to AMEM by November 1 of each year.
- b. Work Authorization. All applicable RW generators shall have in place approved Activity Agreements and/or REOPs.
- c. Waste Certification. All applicable RW generators shall develop and implement a certification program that provides documented confirmation that the receiving facility's waste acceptance criteria has been met.
- d. Waste Management Procedures. All applicable RW generators shall develop and implement procedures for the accumulation, staging if required, and management of RW.
- e. Waste Transfer. Prior to waste transfer between generator, treatment, storage, or disposal facilities, authorizations for shipment must take place between the sender and receiver. The sender shall ensure that the waste meets the receiving facility's waste acceptance criteria and other applicable requirements. The receiver shall ensure all necessary documents and funding are in place to accept the waste.
- f. Personnel Qualifications and Training. The selection, qualification, and training requirements for personnel involved in waste generation at DOE/NV facilities must be established, implemented, documented, and evaluated. Training must be commensurate with job duties and responsibilities and include all aspects of waste handling, certification, and transfer.
- g. Waste Minimization. Waste generators must minimize waste to the extent practical and comply with existing DOE/NV pollution prevention/waste minimization programs and regulations.

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- h. Exemptions. Exemptions from any of the generator requirements must be submitted to the Division Director, WMD, who will evaluate the proposed exemption and present it to the AMEM for approval.

### 3. WASTE ACCUMULATION AND STAGING.

- a. Applicable Waste Type. Staging requirements are applicable to RW.
- b. Time Limits. A generator may accumulate 55 gallons or less of RW at or near the point of generation. Upon exceeding 55 gallons, the waste is considered to be staged. Staging of RW pending treatment and/or disposal is only allowed for less than 90 days unless otherwise approved by the AMEM via the RWID. Determination of the 90-day time limit shall be based on when the quantity exceeded 55 gallons.
- c. Procedures. Procedures must include documentation of inspections of waste accumulation areas and waste packaging.

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## CHAPTER III

### STORAGE REQUIREMENTS

#### 1. APPLICABILITY.

- a. Radioactive Waste Information Document. All applicable RW storage facilities shall prepare an RWID, prior to storing an RW, for review by the Division Director, WMD, and approval by the AMEM. Facilities operating under an approved Authorization Basis may reference those RWID components that have been addressed by the Authorization Basis. Only those RWID components not included in the approved Authorization Basis are subject to review and approval by the AMEM.
- b. Existing Storage Facilities. Existing storage facilities shall have an approved RWID no later than March 5, 2001.
- c. New Storage Facilities. New RW storage facilities shall prepare an RWID prior to accepting RW for storage.

#### 2. RWID COMPONENTS.

- a. Safety Documentation. All applicable RW storage facilities must have evaluated and documented the hazards associated with the operation and waste being managed. This will form the basis of design criteria, waste acceptance criteria, training and qualification of personnel operating the facility, and identify any site specific monitoring. Safety documentation may be in the form of hazards assessments, emergency management plans/procedures, safety analysis reviews, etc..
- b. Facilities Waste Acceptance Criteria. All applicable RW storage facilities must document the characterization, certification, safe transfer, and management requirements that shall be met prior to accepting waste at the storage facility. Included is information on waste forms/phases, radionuclide limitations, and packaging criteria requirements.

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- c. Work Authorization. All applicable RW storage facilities shall have in place approved work authorization documents, such as Activity Agreements and/or REOPs.
- d. Waste Certification. Waste shippers from applicable storage facilities must develop and implement a certification program that provides documented confirmation that the receiving facility's waste acceptance criteria have been met.
- e. Waste Transfer. Prior to waste transfer from a storage facility, authorizations for shipment must take place between the sender and receiver. The sender shall ensure that the waste meets the receiving facility's waste acceptance criteria and other applicable requirements. The receiver shall ensure all necessary documents and funding are in place to accept the waste.
- f. Personnel Qualifications and Training. The selection, qualification, and training requirements for personnel involved in waste storage at DOE/NV facilities must be established, implemented, documented, and evaluated. Training must be commensurate with job duties and responsibilities and include all aspects of waste handling, certification, and transfer.
- g. Facility Monitoring and Inspections. Storage facilities must have a documented monitoring and/or inspection program or procedures. This must include periodic surveys of operational areas and waste packages to ensure integrity and worker protection using as low as reasonable achievable practices.
- h. Facility Design and Operation. Storage facilities must have a documented design and operating procedures based on the hazards analysis.
- i. Waste Minimization. Storage facility operators must minimize waste to the extent practical and comply with existing DOE/NV pollution prevention/waste minimization programs and regulations.
- j. Exemptions. Exemptions from any of the storage requirements must be submitted to the Division Director, WMD, who will evaluate the proposed exemption and present it to the AMEM for approval.

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### 3. STORAGE. Storage Limits:

- a. RW, once identified and/or generated, may be stored for no longer than 1 year unless authorized by an approved RWID.
- b. Where it is not cost-effective to dispose of RW within 1 year, and storage costs will not be greater than disposal costs, a justification for extended storage may be made to AMEM. When waste in its present form does not meet RW acceptance criteria, and additional characterization, repackaging, and/or processing is required, a justification for extended storage may be submitted to AMEM for review and approval. Justification for storage of such waste longer than 1 year shall conform to the following requirements:
  - (1) A written justification must be submitted to and approved by AMEM.
  - (2) The justification must include the reason for the request, timeline for compliance with milestones, identification of technical needs, and identification of funding associated with the activity.
  - (3) The RWID for facilities where such extended storage will occur must include the approved extended storage justification.
- c. A schedule leading to disposal of legacy LLW shall be developed and maintained to incorporate newly identified legacy waste activities.
- d. Storage of MW shall be in accordance with requirements outlined in applicable agreements and regulations, e.g., the *Mutual Consent Agreement*, the *NTS Site Treatment Plan*, *Federal Facility Compliance Act Consent Order*, and RCRA.

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## CHAPTER IV

### TREATMENT REQUIREMENTS

#### 1. APPLICABILITY.

- a. Radioactive Waste Information Document. All applicable RW treatment facilities shall prepare an RWID, prior to treating a RW, for review by the Division Director, WMD, and approval by the AMEM. Facilities operating under an approved Authorization Basis may reference those RWID components that have been addressed by the Authorization Basis. Only those RWID components not included in the approved Authorization Basis are subject to review and approval by the AMEM.
- b. Existing Treatment Facilities. Existing treatment facilities shall have an approved RWID no later than March 5, 2001.
- c. New Treatment Facilities. New RW treatment facilities shall prepare an RWID prior to accepting RW for treatment.

#### 2. RWID COMPONENTS.

- a. Safety Documentation. All applicable RW treatment facilities must have evaluated and documented the hazards associated with the operation and waste being managed. This will form the basis of design criteria, waste acceptance criteria, training and qualification of personnel operating the facility, and identify any site specific monitoring. Safety documentation may be in the form of hazards assessments, emergency management plans/procedures, safety analysis reviews, etc..
- b. Facilities Waste Acceptance Criteria. All applicable RW treatment facilities must document the characterization, certification, safe transfer, and management requirements that shall be met prior to accepting waste at the treatment facility. Included shall be information on waste forms/phases, radionuclide limitations, and packaging criteria requirements.

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- c. Work Authorization. All applicable RW treatment facilities shall have in place approved work authorization documents, such as Activity Agreements and/or REOPs.
- d. Waste Certification. Waste shippers to applicable treatment facilities must develop and implement a certification program that provides documented confirmation that the receiving facility waste acceptance criteria has been met.
- e. Waste Transfer. Prior to waste transfer from a treatment facility, authorizations for shipment must take place between the sender and receiver. The sender shall ensure that the waste meets the receiving site's waste acceptance requirements and other applicable requirements. The receiver shall ensure all necessary documents and funding are in place to accept the waste.
- f. Personnel Qualifications and Training. The selection, qualification, and training requirements for personnel involved in RW treatment at DOE/NV facilities must be established, implemented, documented, and evaluated. Training must be commensurate with job duties and responsibilities and include all aspects of waste handling, certification, and transfer.
- g. Facility Monitoring and Inspection. Treatment facilities must have a documented monitoring and/or inspection program or procedures. This must include periodic surveys of operational areas and waste packages to ensure integrity and worker protection using as low as reasonable achievable practices as implemented through the application of the applicable environmental monitoring and radiological protection standards.
- h. Facility Design and Operation. Treatment facilities must have a documented design and operating procedures based on the hazards analysis.
- i. Waste Minimization. Treatment facilities must minimize the generation of waste to the extent practical and comply with existing pollution prevention/waste minimization programs and regulations as implemented through the application of the applicable environmental protection program standards.
- j. Exemptions. Requests for exemptions from any of the treatment requirements must be submitted to the Division Director, WMD, who will evaluate the proposed exemption and present it to AMEM for disposition.



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## **3. TREATMENT FACILITIES.**

- a. All applicable RW treatment facilities shall have applicable documentation associated with facility design and operation.
- b. Treatment facilities documentation must address waste confinement; adequate ventilation; consideration of D&D activities; instrumentation and control systems; and monitoring.
- c. RWID documentation must include evaluations for environmental and geotechnical characteristics, as well as facility capabilities to demonstrate accommodation of waste to be received for treatment.

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## CHAPTER V

### DISPOSAL REQUIREMENTS

#### 1. APPLICABILITY.

- a. Radioactive Waste Information Document. All applicable RW disposal facilities shall prepare an RWID, prior to disposing a RW, for review by the Division Director, WMD, and approval by the AMEM. Facilities operating under an approved Authorization Basis may reference those RWID components that have been addressed by the Authorization Basis. Only those RWID components not included in the approved Authorization Basis are subject to review and approval by the AMEM.
- b. Existing Disposal Facilities. Existing disposal facilities shall have an approved RWID no later than 3-5-01.
- c. New Disposal Facilities. New disposal facilities shall prepare an RWID prior to disposing of waste.

#### 2. RWID COMPONENTS.

- a. Safety Documentation. All applicable RW disposal facilities must have evaluated and documented the hazards associated with the operation and waste being managed. This will form the basis of design criteria, waste acceptance criteria, training and qualification of personnel operating the facility, and identify any site specific monitoring. Safety documentation may be in the form of hazards assessments, emergency management plans/procedures, safety analysis reviews, etc..
- b. Waste Certification and Receipt. RW disposal facilities shall have a process for confirming that information provided by the sending facility meets the technical and administrative requirements, and is consistent with the waste received. Disposal facilities must have operational procedures for tracking and documenting waste placement in the facility by generating source.

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- c. Facilities Waste Acceptance Criteria. All applicable RW disposal facilities must meet the RW waste acceptance criteria developed by AMEM. The criteria shall include information on waste forms, radionuclide limitations, and packaging criteria requirements.
- d. Work Authorization. All applicable RW disposal facilities shall have in place approved work authorization documents, such as Activity Agreements and/or REOPs.
- e. Facility Design and Operation. Disposal facilities must have a documented design and operating procedures based on the hazards analysis.
- f. Personnel Qualifications and Training. The selection, qualification, and training requirements for personnel involved in waste disposal at DOE/NV facilities must be established, implemented, documented and evaluated. Training must be commensurate with job duties and responsibilities and include all aspects of waste handling, certification, and transfer, and disposal.
- g. Facility Monitoring and Inspection. Disposal facilities must have a documented monitoring program or procedures. This must include periodic surveys of operational areas and waste packages to ensure integrity and worker protection using as low as reasonable achievable practices as implemented through the application of the applicable Radiological Protection and Environmental Monitoring standards.
- h. Environmental Monitoring. Monitoring shall be conducted for RW management facilities as required in the RWID. Disposal facilities shall be monitored, as appropriate, for compliance with conditions of the appropriate disposal authorization statement and RCRA, if applicable.
- i. Closure Plan. Applicable disposal facilities must have a closure plan in place in accordance with Section 3b(4) of this chapter.
- j. Disposal Authorization Statement. Applicable disposal facilities must have an approved disposal Authorization Statement prior to accepting RW for disposal in accordance with Section 3b(3) of this chapter.
- k. PA and CA. PA and CA shall be developed in accordance with Section 3b(1) and (2) of this chapter.

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- l. Waste Minimization. Disposal facility operators must minimize waste to the extent practical and comply with existing pollution prevention/waste minimization programs and regulations.
- m. Exemptions. Requests for exemptions from any of the disposal requirements must be submitted to the Division Director, WMD, who will evaluate the proposed exemption and present it to AMEM for disposition.

### 3. DISPOSAL FACILITIES.

- a. Facility Documentation. All RW disposal facilities shall have applicable documentation associated with facility design and operation and must address waste confinement, consideration of D&D activities, instrumentation and control systems, and monitoring.
- b. On-Site Disposal. On-site disposal shall occur only at DOE/NV authorized facilities.
  - (1) PAs shall be prepared and maintained for RW disposed at DOE/NV facilities.

The PAs shall:

- (a) Contain analyses to demonstrate compliance with performance objectives and to establish limits on concentrations of radionuclides for disposal based on performance measures;
- (b) Establish a point of compliance which corresponds to the point of highest projected dose or concentration beyond a 100 meter zone surrounding the disposed waste;
- (c) Address reasonably foreseeable natural processes that might disrupt barriers against release and transport of radioactive materials;
- (d) Use DOE-approved dose coefficients for internal and external exposure of reference adults;
- (e) Include a sensitivity/uncertainty analysis;

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- (f) Demonstrate that projected releases of radionuclides to the environment shall be maintained in accordance with as low as reasonably achievable practices;
  - (g) Include an assessment of impacts to water resources; and
  - (h) Include an assessment of impacts to inadvertent intruders.
- (2) CA shall be developed for RW disposal and shall:
  - (a) Account for all sources of radioactive material that remain at the DOE/NV site and may interact with the disposal facility.
  - (b) Account for all sources of radioactive material that may contribute to projected doses to members of the public.
  - (c) Supply information on future planning.
  - (d) Be applied to radiation protection activities.
  - (e) Assess future use commitments to minimize the likelihood that current disposal activities will result in the need for future corrective action or remedial actions.
  - (f) Provide information that will ensure adequate protection of the public and environment.
- (3) Prior to construction of a new disposal facility, a disposal authorization statement shall be obtained. This statement will be issued by DOE/HQ based upon a review of the facility's PA and/or CA, as applicable, and closure and monitoring plans. This disposal authorization statement will specify the limits and conditions on construction, design, operations, and closure of the facility. Existing disposal facilities must obtain a disposal authorization statement in accordance with the schedule in the Complex-Wide LLW Management Program Plan. Failure to obtain a disposal authorization statement shall result in shutdown of the disposal facility.

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- (4) A preliminary closure plan shall be submitted to DOE/HQ for review with the PA and/or CA, as applicable. The closure plan will be updated following issuance of the disposal authorization statement to incorporate any specified conditions.

Closure Plans shall be developed for RW disposal facilities and shall:

- (a) Be updated as required during the operational life of the facility.
  - (b) Include a description of how the facility will be closed to achieve long-term stability and minimize the need for active maintenance following closure.
  - (c) Include the total expected inventory of wastes to be disposed of at the facility over its operational life.
  - (d) Contain information regarding closure within a 5-year period after the facility is filled to capacity, or after the facility is determined to no longer be needed.
  - (e) Prior to closure, the final inventory of waste shall be prepared and incorporated into the PA and/or CA, as applicable to support closure.
  - (f) Final closure plan shall be based on the final inventory of waste disposed in the facility. The plan will be implemented, as well as the updated PA and/or CA, as applicable in support of closure.
  - (g) Location and use of the facility shall be filed with local authorities responsible for land use and zoning.
- (5) On an annual basis, a determination of the adequacy of the PA and/or CA, as applicable, shall be made and must consider the results of data collection and analysis from research, field studies, and monitoring. In addition, annual summaries of waste disposal operations must be prepared with respect to the conclusions and recommendations of PA and/or CA, as applicable. In addition, a determination will be made regarding the need to revise the PA and/or CA.

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c. Off-Site Disposal.

- (1) TRU and mixed TRU currently in storage at the NTS shall be disposed of at the Waste Isolation Pilot Plant.
- (2) Shipment of DOE/NV RW to off-site DOE or commercial disposal facilities must be approved by AMEM.

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**Attachment 1  
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## **CONTRACTOR REQUIREMENTS DOCUMENT**

Contractors, national laboratories, other federal agencies, and other users that generate, treat, store, or dispose of radioactive waste (RW) shall:

1. Conform to principles, practices, and requirements contained within this Manual.
2. Develop Radioactive Waste Information Documents (RWID) in accordance with this Manual. Technical elements comprising the RWID are delineated in Chapters II through V. Facilities and generators operating under an approved Authorization Basis may reference those RWID components that have been addressed by the Authorization Basis. Only those RWID components not included in the approved Authorization Basis are subject to review and approval by the AMEM.